GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[x] ORIGINAL [ ] REVISION NO. _____

Project No. A-3362 C 0 GTRI/GIT DATE 10/6/82

Project Director: Ginny Thomas ~~School~~/Lab EDL/OD

Sponsor: Qualiplastic Cia, Ltda.

Type Agreement: Standard Research Project Agreement

Award Period: From 10/1/82 To 11/30/82 (Performance) 11/30/82 (Reports)

Sponsor Amount: Total Estimated: $ 1,590 Funded: $ 1,590 (Advance Payment)

Cost Sharing Amount: $ _____ Cost Sharing No: _____

Title: A Market Study of Low and High Density Polyethylene Flexible Packaging

ADMINISTRATIVE DATA

OCA Contact Faith G. Costello

1) Sponsor Technical Contact:

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Defense Priority Rating: NA

Military Security Classification: _____

(or) Company/Industrial Proprietary: _____

RESTRICTIONS

See Attached NA Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with NA

COMMENTS:

COPIES TO:

Research Administrative Network
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GTRI
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Research Communications (2)
Project File
Other _____
Other _____

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION SHEET

Date 2/11/83

Project Title: A Market Study of Low and High Density Polyethylene Flexible Packaging

Project No: A-3362

Project Director: Ginny Thomas

Sponsor: Qualiplastic Cia. Ltda.

Effective Termination Date: 11/20/82

Clearance of Accounting Charges: 11/20/82

Grant/Contract Closeout Actions Remaining:

- [x] Final Invoice ~~and Closing Documents~~
- [ ] Final Fiscal Report
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Assigned to: EDL/OD (~~School~~/Laboratory)

COPIES TO:

Administrative Coordinator	Research Security Services	EES Public Relations (2)
Research Property Management	~~Reports Coordinator (OCA)~~	Computer Input
Accounting	Legal Services (OCA)	Project File
Procurement/EES Supply Services	Library	Other Thomas

A Market Study of Low and High Density Polyethylene Flexible Packaging

Prepared for:

Qualiplastic Cia, Ltda.
Casilla: 3396
Quayaquie, Ecuador
A-3362

by

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Background

In order to assess market conditions for low and high density polyethylene flexible packaging material in Georgia and North Florida, Qualiplastic Cia, Ltda. requested that the Georgia Tech Economic Development Laboratory conduct a marketing study. This study was designed to address the following questions:

- What manufacturers in Georgia and North Florida currently manufacture flexible packaging materials?
- What is the current demand for this material in Georgia and North Florida?
- What are the current and projected market conditions?
- How difficult would it be to break into this market?
- What are the distribution patterns of the finished product?

Methodology

Data on current and projected market conditions for the flexible packaging field were collected through both indirect and direct means. For the purpose of this study, data for Standard Industrial Classification Code 3079 (Packaging Materials, Plastic) were studied.

Indirect methods were used to gather information on manufacturers and total sales volume. Lists of flexible packaging manufacturers were developed from directories. Historical and current sales volume (in pounds and total dollar value) were also collected from indirect sources.

Direct methods were used to develop data on manufacturers, buyers, and both current and projected market conditions. A questionnaire, attached as an appendix to this report, was developed to gather information from sales and production managers through telephone interviews. Interviews were conducted with companies in south Florida in order to field-test the questionnaire. Specific information was obtained concerning flexible packaging materials for both low and high density polyethylene, including:

- film
- bags
- sheets
- rolls
- liners
- tubes

Data were also requested concerning custom film printing, business problems encountered, competition, and projections of future market conditions. All interviews were conducted with persons knowledgeable about market conditions, usually the company sales or production manager, and took place within a two-week period. Questionnaires were then edited, results were cross-tabulated, and the resultant information analyzed.

Manufacturers of Polyethylene Flexible Packaging

Lists of manufacturers of polyethylene flexible packaging material were compiled from the 1982 Georgia Manufacturing Directory and the 1981 Florida Manufacturing Directory. Sixteen firms were located in Georgia and one firm was located in North Florida. (In Florida a total of 13 firms were located in the entire state.) These firms were contacted by telephone and a sales or production manager interviewed.

A total sample of 17 firms in the market area were listed as producing flexible packaging materials (see Figure 1). As indicated in Table 1, these 17 firms showed total employment of 2,247 employees; with six firms employing under 50 employees, 6 firms employing between 50-100, and five firms employing over 100 employees. Six of these firms, however, reported that they did not manufacture polyethylene flexible packaging materials. In examining those firms responding to the survey, the 11 firms showed a total employment of 742 employees, with four firms employing under 50 employees, 6 firms employing 50-100 employees, and 1 firm employing over 100 employees. The most current data was collected from the survey. When data was not available, it was taken from the directories.

Appendix A lists the 17 companies surveyed with the following characteristics: address, number of employees, and whether or not the firm provided custom film printing. Nine companies (53%) provided custom film printing. Table 2 shows the type of flexible packaging manufactured by the 11 companies in the survey.

FIGURE I

● Manufacturer of Flexible Packaging Material
* Second Manufacturer located in County

Table 1

Manufacturers of Polyethylene Flexible Packaging

	Number of Firms	Total Employment*	Size by # of Employees		
			Under 50	50-100	over 100
Georgia	16	2,241	5	6	5
North Florida	1	6	1	-	-
Total	17	2,247	6	6	5

Respondents to Polyethylene Flexible Packaging Survey

	Number of Firms	Total Employment*	Size by # of Employees		
			Under 50	50-100	over 100
Georgia	10	736	3	6	1
North Florida	1	6	1	-	-
Total	11	742	4	6	1

*Data taken from the survey; when not available employment was taken from the manufacturing directory.

Table 2

Type of Flexible Packaging Material Manufactured

	Low Density Polyethylene	High Density Polyethylene
Film	7	1
Bags	7	1
Sheets	6	-
Rolls	7	1
Liners	7	1
Tubes	5	1
Other*	3	1
Total Companies	10	1

*Others included: 1) low density polyethylene co-extruded cast and blown materials, laundry shoulder bags, and J sheeting; and 2) high density polyethylene: 2 oz. bottles.

Demand For Polyethylene Flexible Packaging Material

Before examining the demand for polyethylene flexible packaging material in the market area (Georgia and North Florida), it will be useful to look at the national demand for all flexible packaging material. The data show a steady increase in sales of flexible packaging materials from 1960 to 1980. Table 3 shows the value of flexible packaging materials in comparison to other types of packagings during this twenty-year period. Also shown in Table 3 is the average annual growth rate for flexible packaging materials and other types of packagings. From 1960 to 1980, the average annual growth rate for all types of packagings was 7.5%. The growth rate for flexible packaging materials was 5.9%; however, within this category the growth rate for low density polyethylene film was 9.5%.

Protective plastics packaging is the most dynamic and rapidly growing segment of the packaging industry, with forecasted increases in demand of over 10% a year, according to a new study by Charles H. Kline & Company, a consulting firm in Fairfield, N.J.

Projections for the flexible packaging manufacturer are very optimistic. Predicasts, Inc., a Cleveland, Ohio based information and market research firm has predicted that plastics will account for nine percent of the packaging market by 1995, a growth of over seven percent annually. This gain will be the result of several factors, including unitization trends, product innovations, weight savings, and cost competitiveness. Again, most manufacturers predict expansion of the market and a need for new and/or expanded manufacturing facilities.

End uses for polyethylene film in packaging are categorized by food and nonfood products. Table 4 shows the consumption of polyethylene film in packaging by end use for the U.S. from 1970-1980.

Demand for low density polyethylene flexible packaging material exceeds manufacturing capabilities in Georgia and North Florida. Many companies surveyed saw a need for expansion within the next two years. Some manufacturers report problems because they cannot produce the product fast enough to keep pace with demand. Thus it would appear very easy to break into this market.

Table 3

Value of Packaging Materials
(million dollars)

Containers or Material	1960	1970	1975	1979	1980	Average Annual Growth Rate 1960-1980	1970-1980	1975-1980
Paper and Paperboard Containers	$ 4,706	$ 7,454	$11,693	$16,617	$18,481	7.1	9.5	9.6
Flexible Packaging Materials	830	1,574	2,010	2,410	2,585	5.9	5.1	5.2
Film Polyethylene, LD	140	600	630	810	860	9.5	3.7	6.4
Metal Containers and Components	2,225	4,377	7,472	11,136	11,641	8.6	10.3	9.3
Glass Containers	937	1,785	2,960	4,216	4,487	8.1	9.7	8.7
Rigid & Semirigid Plastic Containers	149	675	1,159	2,060	2,280	14.6	12.9	14.5
Wooden Containers	422	615	493	558	590	1.7	-0.4	3.7
Other	1,354	2,009	3,262	4,514	4,935	6.7	9.4	8.3
Total	$10,763	$19,089	$29,679	$42,321	$45,859	7.5	9.2	9.1

Source: Rich, Susan, "The Statistics of Packaging," The Packaging Encyclopedia, CAHNERS: Chicago, 1982. pp. 59-65.

Table 4

National Consumption of Polyethylene Film in Packaging (million pounds)

End Use	1970	1975	1979	1980
Food				
Bread, Cake	140	220	232	234
Meat, Poultry	25	55	120	120
Fresh Produce	165	150	118	118
Dairy Products (b)	13	35	42	42
Frozen Foods	40	50	82	82
Candy/gum	24	30	32	30
Snacks	8	15	30	25
Beverages		15	25	20
Dry Foods (c)	40	55	85	80
Other (d)	35	45	85	80
	490	670	851	831
Nonfood (e)				
Shipping bags, liners	100	250	280	270
Textile	85	100	162	154
Rack and Counter	85	100	162	154
Paper	65	67	96	90
Garment	90	85	98	92
Retail bags	-	40	62	58
Supermarket bags	-	35	100	102
Shrink/Stretch (8)	-	115	268	260
Medical Supplies	-	35	50	45
Other	60	69	85	80
	485	901	1,369	1,313

a Excludes 150 mm lbs. of HDP flexible packaging used primarily as merchandise bags, converted wraps, and plain wraps.
b Includes bag-in-box.
c Includes cereals, vegetables, noodles, and crackers.
d Includes ice bags.
e Excludes household bags and wraps and trash bags.
f Includes nonfood bundling, unitizing, etc.

Source: Rich, Susan. "The Statistics of Packaging," The Packaging Encyclopedia, CAHNERS: Chicago, 1982. pp. 59-65

Specific data on consumption of polyethylene for the Georgia/North Florida market area are not available. In order to determine the market in that area, the consumption of polyethylene at the national level was related to key variables such as retail sales to determine if a relationship existed. Variables scrutinized were determined by examining the end uses for polyethylene. Since polyethylene packaging material is heavily used in the food industry, food and kindred products employees and food stores employees were examined. Other variables examined were apparel and textile products employees, and total retail sales. Of these variables, national consumption of polyethylene flexible packaging divided by national retail sales appeared to be the most stable and ranged from 2.4 to 2.8 pounds per dollar of retail sales, with the exception of 1960 (1960 - 1.2; 1970 -2.7; 1975 - 2.8; 1979 - 2.8; 1980 - 2.4). If we apply these factors of polyethylene flexible packaging material per dollar of retail sales to the retail sales in the market area in 1980, we obtain the results shown in Table 5, which indicate a market of between 71.99 and 83.98 million pounds. If this same consumption distribution is assumed for the Georgia/North Florida market area, then the range for low density polyethylene consumption would be 66.95 to 78.10 million pounds, while the consumption of high density polyethylene consumption would range from 5.04 to 5.88 million pounds. See Table 5 for the estimated consumption of polyethylene for the market area in 1980. Nationally, low density polyethylene accounted for 94% of consumption, and high density polyethylene accounted for 6% of consumption.

Survey Results

The following list of current market prices for polyethylene per pound are spot quotations and/or list prices of suppliers on a New York or other indicated basis.*

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*Source: Chemical Marketing Reporter, Schnell Publishing Co., Inc., 12/13/82, pp. 16-42.

Polyethylene - high density - $0.4825 - $0.485
Polyethylene - low density film - $0.28 - $0.32
Polyethylene - linear low density - $0.35

Table 5

Estimated Consumption of Polyethylene for Market in 1980 in Million Pounds

State	1980 Retail Sales	Assuming Pounds Consumed per Dollar Retail Sales is	
		2.4 lbs./$	2.8 lbs./$
Georgia	22,073	52.98	61.81
North Florida	7,919	19.01	22.17
Total		71.99	83.98

Information on annual sales and average cost per pound by the type of flexible packaging material was requested from survey respondents. Of the 11 companies interviewed, only two were willing to give information on annual sales. Annual sales ranged from $48,000 to $1 million. Most of the survey respondents were unwilling to divulge unit price information; however, one company indicated a unit price of $0.54/lb. for low density polyethylene and $0.78/lb. for high density.

Of the total sample, 8 companies (73%) indicated that there was more of a demand for smaller orders than large ones. Table 6 presents this data. Companies also indicated the range they considered to constitute a large and a small order. Large orders ranged from 4,000 pounds to 250,000 pounds, whereas small orders ranged from 500 pounds to 2,000 pounds. Eight companies indicated that they do offer discounts for large orders. Six companies (55%) require a minimum size order.

Table 6

Demand For Size Order
(Number of Respondents = 11)

Size Order	Number of Respondents
Large Orders	1
Small Orders	5
Specialized/ Custom Orders	2
Varies	3

Types of companies reported as purchasing flexible packaging materials are shown in Table 7. Industrial plants and clothing and textile manufacturers are the most frequently mentioned purchasers of low density polyethylene flexible packaging materials. Five survey respondents indicated that they served a regional geographical area, consisting of states in the southeastern United States. Two companies indicated serving the entire United States, and two companies expanded their market internationally. Table 8 illustrates the geographical area served by the companies interviewed.

Large diversified manufacturers were cited as the most common competitor by the flexible manufacturers. Table 8 also shows the types of competitors mentioned by the respondents of the survey.

When asked what problems have been encountered, two (18%) of the 11 sales/production managers surveyed indicated no problems. Low demand for products is considered a problem in four (36%) of the companies. Two of the companies that indicated low demand for products also cited the overall economy as the reason for this problem. One sales manager remarked, "the market is there . . . but turning to smaller jobs because of interest rates. Interest rates are high and they cannot afford to stock pile." Table 9 represents problems reported by number of companies.

Table 7

Type of Customer (Buyer)
(Number of Respondents = 11)

Type Customer/Buyer	Georgia	Florida
Laundries	1	-
Small Department Stores	1	-
Large Department Stores	2	-
Supermarkets	3	-
Industrial Plants	4	-
Hardware Stores	0	-
Clothing/Textile Manufacturers	4	-
Agricultural Plants	2	-
Bakeries	1	-
Butcher Shops	0	-
Dairies	1	-
Medical Suppliers	3	-
*Other	3	1

* Other included: distributors; government agencies; food processors; poultry plants; and tropical fish stores.

Table 8

Geographical Area Served

State	Local	Regional	National	International
Georgia	-	4	2	2
Florida	-	1	-	-

Competition

Type	Georgia	Florida
Large Diversified Manufacturers	4	1
Specialized Manufacturers	3	
Foreign Companies	2	
Small Businesses	2	

Table 9

Problems Reported by Sales/Production Manager

Problems	Total Companies
Low worker productivity	3
High interest rates	3
Low demand for products	4
High materials cost	3
Government regulations	2
Poor management	1
Lack of skilled workers	2
Poor overall economy	3
None	2

APPENDIX A

Manufacturers of Polyethylene Flexible Packaging

Appenix A

Manufacturers of Polyethylene Flexible Packaging

Georgia

Borden Chemical
Resinite Department
P.O. Box 456
Griffin, GA 30223
No. of Employees: 177
Custom film printing: no answer

Buck Plastics Company
P.O. Box 868
Columbus, GA 31902
No. of Employees: 25
Custom film printing: no answer

Columbus Packaging Co.
1700 Concord Boulevard
Columbus, GA 31904
No. of Employees: 176
Custom film printing: no answer

Crayex Corporation
P.O. Box 693
McDonough, GA 30253
No. of Employees: 10
Custom film printing: no

Dixie Bag Company
4880 Massachusetts Boulevard
College Park, GA 30337
No. of Employees: 70
Custom film printing: no

Edison Plastics Co.
P.O. Box 609
Washington, GA 30673
No. of Employees: 51
Custom film printing: yes

Ethyl Corp. Visqueen Division
1425 Vernon Boulevard
LaGrange, GA 30240
No. of Employees: 108
Custom film printing: no answer

Flex-On, Inc.
P.O. Box 425
Senoia, GA 30276
No. of Employees: 54
Custom film printing: no answer

Georgia Poly Products, Inc.
P.O. Box 649
Lawrenceville, GA 30246
No. of Employees: 86
Custom film printing: yes

Microplas Industries, Inc.
P.O. Box 47387
Doraville, GA 30362
No. of Employees: 12
Custom film printing: yes

Mobil Chemical Company
Industrial Drive
Covington, GA 30209
No. of Employees: 837
Custom film printing: no answer

Poly-Pac, Inc.
P.O. Box 1007
Dalton, GA 30720
No. of Employees: 86
Custom film printing: yes

Precision Film Extruders, Inc.
P.O. Box 1007
Dalton, GA 30720
No. of Employees: 32
Custom film printing: yes

St. Regis Paper Co.
Flex Packaging Division
P.O. Box 10708 Station A
Atlanta, GA 30310
No. of Employees: 400
Custom film printing: no answer

Spartan Packaging, Inc.
P.O. Box 649
Lawrenceville, GA 30246
No. of Employees: 32
Custom film printing: yes

Star Packaging Corporation
P.O. Box 146
Riverdale, GA 30274
No. of Employees: 85
Custom film printing: yes

North Florida

General Plastics Corporation
Homeline Corporation
P.O. Box 520738
Medley, FLA 33152
No. of Employees: 7
Custom film printing: no answer

APPENDIX B

Questionnaire

Name of Company _____ Telephone _____

Address _____ Date _____

Contact _____ Title _____
(Talk to Sales Manager, Production Manager, etc.)

Hello, I'm _____ from the Georgia Institute of Technology. Georgia Tech is doing a study of market conditions in the flexible packaging field. We're contacting people in industry with knowledge of current conditions and insight into possible future conditions. May I ask you a few questions?

1a. What types of flexible packaging materials does your company make?

Low density polyethylene	High density polyethylene
_____ Film	_____ Film
_____ Bags	_____ Bags
_____ Sheets	_____ Sheets
_____ Rolls	_____ Rolls
_____ Liners	_____ Liners
_____ Tubes	_____ Tubes
_____ Other (Specify)	_____ Other (Specify)
_____	_____

1b. About how much of each type does your company sell a year?

Low density polyethylene	High density polyethylene
_____ Film	_____ Film
_____ Bags	_____ Bags
_____ Sheets	_____ Sheets
_____ Rolls	_____ Rolls
_____ Liners	_____ Liners
_____ Tubes	_____ Tubes
_____ Other (Specify)	_____ Other (Specify)
_____	_____

1c. We're trying to get an idea of the most commonly manufactured types of LDPE and HDPE and their prices. Could you give me information on your standard size:

Low density polyethylene				High density polyethylene			
Film	_____	Price	_____	Film	_____	Price	_____
Bags	_____	Price	_____	Bags	_____	Price	_____
Sheets	_____	Price	_____	Sheets	_____	Price	_____
Rolls	_____	Price	_____	Rolls	_____	Price	_____
Liners	_____	Price	_____	Liners	_____	Price	_____
Tubes	_____	Price	_____	Tubes	_____	Price	_____
Other	_____	Price	_____	Other	_____	Price	_____

1d. Is your company involved in custom film printing?

_____ Yes _____ No

2a. What were your company's total annual sales for (a) large orders; (b) small orders?

(record comments) _____

_____

_____

2b. Would you say there is more of a demand for (a) large orders; (b) small orders?

(record comments) _____

_____

_____

2c. What would you say constituted a large order? _____

a small order? _____

2d. Do you offer discounts for large orders?

_____ Yes _____ No

2e. Do you require a minimum size order? _____ Yes _____ No

(If yes) What size is that? _____

3. Who buys your products?

_____ Laundries	_____ Industrial Plants	_____ Bakeries
_____ Large Department Stores	_____ Hardware Stores	_____ Butcher Shops
_____ Small Stores	_____ Clothing Manuf.	_____ Dairies
_____ Supermarkets	_____ Agriculture Plants	_____ Medical Supplies
		_____ Other (specify)

4. How large a geographical area does your company serve? _____

_____

5a. Are your competitors primarily:

_____ Large diversified manufacturers

_____ Specialized manufacturers

_____ Foreign companies

_____ Other (specify) _____

5b. In the present economy, many companies are being forced to reduce their workforce, expand their product line or even go out of business. What problems are you encountering in your company? (Ask)

_____ None (do not ask)	_____ Poor management
_____ Low worker productivity	_____ Lack of skilled workers
_____ High interest rates	_____ Other (specify)
_____ Low demand for products	_____
_____ High materials costs	_____
_____ Government regulations	_____

6. Could you tell me the number of employees your company has? _____

Thank you for your cooperation